



Mach 1[®] Speed Charger[™]

For 3.6 & 6.0 Volt

NiCd / NiMH Batteries

Universal Charger for NiCd / NiMH Camcorder Batteries

PLEASE READ THE INFORMATION AND FOLLOW ALL INSTRUCTIONS THOROUGHLY BEFORE USING THIS PRODUCT.

Introduction

The Mach 1 Speed Charger is a highly advanced and fully automatic battery charger which is compatible with 3.6 & 6.0 Volt NiCd / NiMH batteries for camcorders from Sony, JVC, Panasonic, Sharp, Hitachi, RCA and other manufacturers.

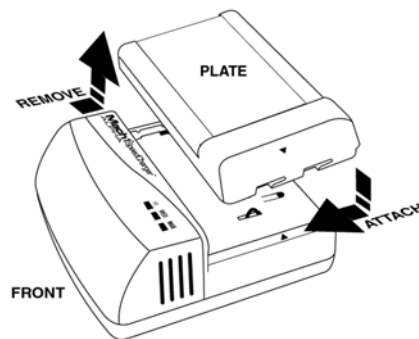
The Mach 1 Speed Charger features microprocessor controlled Neotherm[®] active pulse speedcharging to charge your battery more than twice as fast as other chargers. Not only will it charge the battery safely and reliably, it will prolong the battery life. Charging progress, MAX charge and error conditions are all provided by the LED indicators.

Flexible power input allows you to use the Mach 1 Speed Charger from home or overseas with its 110V-240V AC Universal Power Supply, or on the road using the DC Cigarette Lighter Adapter included.

Operation:

Getting Ready

Choose the adapter plate for the type of battery you will be charging. Each of the adapter plates is labeled as to the batteries it can work with. If the charger base does not already have the adapter plate you want attached, you will need to remove the adapter plate first by pushing down on the plate and sliding it to the rear of the charger base (away from the LED indicators). Then, attach the selected adapter plate to the charger unit by aligning the arrows on the sides of the adapter plates and the charger base as shown. While pressing down lightly on the adapter plate, slide the plate toward the front of the charger base until it locks.



Plug-in, either the AC Adapter or the DC Cigarette Lighter power adapter, and connect the other end of the power adapter cable to the power input jack on the rear of the charger unit.

Status LED's

Together, the three LED's on the front of the Mach 1 charger will indicate the status of the battery and the charger. See the descriptions and diagrams included in the following sections regarding the various indications and their meaning.

Charging Your Battery

StandBy Mode: Without any battery installed, the charger will flash the LED on the left, marked *MED*, indicating that the charger is standing by and waiting for a battery to be connected (see diag.-1).



Diag.-1

Once a battery has been properly connected to the appropriate adapter plate, the charger will determine the status of the battery and begin the proper phase of the charging cycle. There are 3 phases to the charge cycle. The battery may be removed during any of the charging phases without harm to the battery or charger unit.

Phase I – Initial Charge: All 3 LED's flashing in sequence from *MED* (left) to *MAX* (right) (see diag.-2). If the battery is low, this will be the first charge phase. With high capacity batteries, this phase can sometimes be the longest of the 3 phases. Similarly, with some low capacity batteries and batteries reaching the end of their life, this phase can be very short.



Diag.-2

Note: When the battery is first connected, the LED's may instantly indicate *MED*, *HI* or *MAX* charge depending on the charge status of the battery. The process will continue normally from that point forward.

Note: It is normal for the charger, AC adapter, or the battery to become warm during charging.

Phase II – MED Charge: The *MED* LED is on continuously and other LED's are flashing in sequence (see diag.-3). At this point the battery is typically about 50% charged. Some batteries, if they are worn out and near the end of their life, can be as low as 10% charged.



Diag.-3

Phase III – HI Charge: The *MED* and *HI* LED's are on and the *MAX* LED is flashing (see diag.-4). At this point the battery is typically, about 70% charged.



Diag.-4

Charge Complete – MAX Charge: All three LED's are on at the same time (see diag.-5). Charging has completed and the battery is fully charged. It is recommended to remove the battery at this time.



Diag.-5

Error Condition – Charge Terminated: If the battery is removed before a complete charge has been reached, **the charger will continue indicating the last complete charging phase for up to 1 minute.** After that time, an 'Error' indication will appear on the LED's, shown by the *MED* and *MAX* LED's coming on together while the *HI* LED is off (see diag.-6).



Diag.-6

The Error Condition will also be indicated if the charger senses any problem with the battery being charged. To reset the error condition, unplug the charger from the power adapter for a few seconds, then reconnect it to the power adapter. If the Error occurs again, there may be a defect in the battery that will prevent safely charging.

Estimated Battery Charge Times:

Battery Capacity	Time to MAX Charge *
1200mAh	45 min.
1600-1800mAh	50 min.
3800mAh	100 min.

* Actual charge times may vary depending on the battery, cell condition and capacity.

Trouble Shooting Tips:

- Batteries should be replaced when runtime becomes short.
- If the LED status indicator does not light up when the charger is plugged into either supplied power adapter, recheck the connections and make sure that the AC socket or cigarette lighter has power.

- If the battery is attached, and the status indicator is showing “Stand By” (indicated by the *MED* light flashing and all other lights off), the battery may not be making proper contact to the adapter plate. Unplug the unit and check that the battery is attached correctly. Also, make sure the adapter plate is the proper one and that it is securely attached to the charger base.
- Use a clean dry cloth when necessary to keep the metal contacts of both charger and battery clean.

Cautions:

- For use with 3.6 or 6V NiCd / NiMH batteries ONLY! Use with other type batteries voids warranty, may cause damage to the charger / battery and possibly cause injury to the user.
- Do not leave battery connected to camcorder or camera when not in use.
- Do not leave the battery connected to the charger for prolonged periods. Remove the battery after charge is complete.
- Unplug the charger when not in use.
- Do not use, place or store the charger where it may come into contact with water or moisture.
- Always replace frayed or damaged wire and broken plugs immediately.
- Use this charger with the power adapters included in the package only.
- No user serviceable parts, opening chassis will void warranty.

The following statement is required in the state of California pursuant to the settlement of an action brought by the Mateel Environmental Justice Foundation against multiple electronics and appliance manufacturers

WARNING: Handling the cord on this product will expose you to lead, a chemical known to the state of California to cause birth defects or other reproductive harm. **Wash hands after handling.**

Note: Batteries will self discharge when not in use whether they are installed in a camcorder, digital camera or not. Batteries can be kept fresh if you recharge them every 2-3 months. NiCD batteries should be stored uncharged.

Specifications:

- AC Adapter: 110 – 240VAC, 50 / 60Hz
- Power Input: 12-18 VDC @ 2A
- Charge Method: Patented Neotherm Charging Technology
- Charge Rate: Variable, Continuously Adjusted via Microprocessor

Limited 3 Year Warranty

This limited warranty starts from the date of original purchase and expires 3 years thereafter. If, during this period, any part, because of manufacturing defects or workmanship fails to function properly under normal use will be repaired at no charge for parts and labor or, at our option, the product will be replaced. The following is excluded: damages from delay or loss of use of equipment, or damaged batteries, malfunctions resulting from misuse, tampering, unauthorized repairs, modifications, or accident.

Package the unit and its accessories carefully using ample padding material to prevent damage in transit and ship it prepaid and insured to:

Lenmar Enterprises, Inc.
4035 Via Pescador
Camarillo, CA 93012

When sending in product for service, your package should include evidence of date and place of purchase. Enclose \$10.00 for shipping and handling for addresses in the U.S. For outside the U.S. and Canada, freight will vary depending upon ship to address.

For additional questions, comments or to explore other Lenmar battery solutions, visit our web site at: www.Lenmar.com or call us at 805/384-9600